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## Patent Application

Application #: 10/707,091

Group Art Unit # 2859

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Examiner: R. Alexander Smith

Title: Teaching Sin and Cosine Instrument

## Arguments

- 1) The following arguments are provided to justify claims against the rejections listed in the office action.

The amendments includes no new matter that was not disclosed in the original specifications.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Gerald Bauldock



**Arguments:**

V. A. Schoenberg: The main objective of this invention is to provide an improved trigonometric calculating device whereby trigonometric problems may be evaluated without the aid of texts, tables or formulae. The patent does not mention that the device will be used to teach the equations used to calculate sine, cosine, tangent and the other trigonometric functions. They even state that the device is to be used without the use of formulae. So I interpret that as they are not trying to teach the formulae or equations. My device is intended to teach the relationship between a right triangle, the length of its hypotenuse, the length of the two sides and the trigonometric functions and the equations involved.

Schoenberg's device is intended to be used and easily read and utilized with maps and charts. Again, this clearly shows that the intentions for the device is not meant to teach students the relationships between the trigonometric functions and a right triangle.

Another critical fact proving that Schoenberg's device is not intended to be used to teach the relationship between a right triangle and the trigonometric function is the lack of negative numbers on the device. It is not capable of calculating values for the trigonometric functions in all four quadrants. It is not designed to revolve 360 degrees.

My invention is designed to revolve 360 degrees and show the relationship between a right triangle and the trigonometric functions in all four quadrants.

E. H. Gates: Gates starts out by saying that his/her invention relates to measuring instruments and more particularly to an instrument by which an unknown dimension of a side or angle of a triangle can be readily obtained, and the purpose of the invention is the provision of an instrument of this character which is particularly adapted, although not necessarily, for use in determining the angle at which the confronting ends of two pipes are to be cut in order to provide a perfect butt joint between the two when desiring to form an elbow of a predetermined angle.

It is clear that the intentions for the device is not meant to teach students the relationships between the trigonometric functions and a right triangle.

Another critical fact proving that Gates' device is not intended to be used to teach the relationship between a right triangle and the trigonometric function is the lack of negative numbers on the device. It is not capable of calculating values for the trigonometric functions in all four quadrants. It is not designed to revolve 360 degrees.

My invention is designed to revolve 360 degrees and show the relationship between a right triangle and the trigonometric functions in all four quadrants.

H. I. Shimberg: There are many devices that are different but can performed the same functions. Example, an airplane and a helicopter. They both can fly through the air. However, they are two different machines and I would doubt that the inventor of an airplane would claim the helicopter as his invention. Comparing Shimberg's invention to my invention is like comparing an airplane to a helicopter.

Shimberg's invention consist of a flat sheet of suitable materials adapted to have lines and numerals engraved, stamped, printed or otherwise impressed. It also consist of a rotatable member and a vertical member. The vertical member is pivoted to the rotatable member. The center of the pivot lies at all times on the circumference of the circle no matter which position the rotatable member assumes. Shimberg claims the combination of a sheet, of a first horizontal line marked on said sheet and indicating one side of all angles, a circle on the sheet of which said line is a radius, a series of angles marked in said circle, all having a common vertex at the inner end of said line.

My invention consist of a horizontal ruler, a vertical ruler, a pivoting ruler and a circular plate. The horizontal ruler and the vertical ruler slide over each other. The pivoting ruler rotates 360 degrees around the circular plate and there are no members attached that hang vertical. The operation of my invention compared to Shimberg's is as different as a airplane to a helicopter.

In addition, Shimberg's invention is limited in its ability compared to my invention. One activity described in my application involves leaving the pivoting ruler at a constant angle (e.g. 30 degrees). Slide the vertical ruler to different positions along the horizontal ruler. This allows the right triangle that is formed by the pivoting ruler, the vertical ruler and the horizontal ruler to change in size while keeping the length of each ruler proportional to each other. Students will find that the ratios of the horizontal ruler/pivoting ruler and the vertical ruler/pivoting ruler will also remain constant even though the vertical ruler is moved to different positions on the horizontal ruler. The students learn that the cosine and sine and other trigonometric functions will remain constant as long as the proportions of the right triangle are the same.

Summary: The present invention, as distinguished from the prior art, provides a device that clearly demonstrates the relationship between a right triangle, its sides, angles and the trigonometric functions. None of the prior art uses a device or tool that includes a horizontal and vertical ruler attached by a sliding attachment bracket along with a circular plate showing 360 degrees of the circle attached to the horizontal ruler along with a pivoting ruler that can rotate 360 degrees around the circular plate, and shows positives and negative values on a vertical and horizontal ruler, and has the ability to construct right triangles of different proportions at a constant angle.